

--30. (new) A method of manufacturing a carcass structure for vehicle tyres, comprising the steps of:

making at least one carcass ply by deposition of elongated sections circumferentially distributed on a toroidal support, each of the elongated sections extending in a U-shaped configuration around a cross-sectional outline of the toroidal support to define two side portions mutually spaced apart in an axial direction and one crown portion extending at a radially outer position between the side portions; and

applying annular reinforcing structures to a region close to inner circumferential edges of the at least one carcass ply;

wherein each of the elongated sections is laid down substantially in a plane parallelly } offset relative to a meridian plane of the toroidal support.

31. (new) The method of claim 30, wherein each of the elongated sections is laid down in a plane parallel to the meridian plane of the toroidal support so that each crown portion substantially lies in a reference plane radial to a geometric axis of the toroidal support and passes through transition regions between a respective crown portion and respective side portions, and wherein the respective side portions each extend in an inclined direction relative to the reference plane.

32. (new) The method of claim 30, wherein deposition of the elongated sections comprises the steps of:

laying down a first series of elongated sections circumferentially distributed on the toroidal support; and

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laying down a second series of elongated sections circumferentially distributed on the toroidal support.

33. (new) The method of claim 32, wherein elongated sections of the first series and the second series are laid down in offset deposition planes at respectively opposite sides relative to the meridian plane of the toroidal support so that the side portions of the elongated sections of the first series and the second series have respectively crossed orientations.

34. (new) The method of claim 32, wherein the elongated sections of the first series are laid down at a circumferential pitch which is at least twice a width of the elongated sections of the first series, and wherein the elongated sections of the second series are laid down in spaces existing between the elongated sections of the first series to define the at least one carcass ply together with the elongated sections of the first series.

35. (new) The method of claim 32, wherein the elongated sections are laid down at a circumferential pitch corresponding to a multiple of a width of the elongated sections, and wherein each of the elongated sections is a strip structure and comprises longitudinal and parallel thread elements at least partly covered with at least one layer of raw elastomer material.

36. (new) The method of claim 30, wherein the crown portions of each elongated section are arranged consecutively in side-by-side relationship along a circumferential extension of the toroidal support, and wherein the side portions of each elongated section are each partly covered with a side portion of at least one circumferentially adjacent elongated section.

37. (new) The method of claim 32, wherein at least one first primary portion of each annular reinforcing structure is applied against side portions of the elongated sections of the first series before deposition of the elongated sections of the second series, and wherein the elongated sections of the second series are laid down with respective side portions overlapping the at least one first primary portion on axially opposite sides relative to the side portions of the elongated sections of the first series.

38. (new) The method of claim 37, wherein after deposition of the elongated sections of the second series, the following further steps are carried out:

laying down a third series of elongated sections circumferentially distributed on the toroidal support;

applying second primary portions of each annular reinforcing structure against side portions of the elongated sections of the third series at axially opposite positions relative to the at least one first primary portion of each annular reinforcing structure; and

laying down a fourth series of elongated sections circumferentially distributed on the toroidal support, wherein respective side portions of the elongated sections of the fourth series overlap the second primary portions on axially opposite sides relative to the side portions of the elongated sections of the third series.

39. (new) The method of claim 38, wherein the elongated sections of the first series and the third series are laid down at a circumferential pitch corresponding to a multiple of a width of the elongated sections, and wherein the elongated sections of the second series and the fourth

series respectively are each laid down between two consecutive elongated sections of the first series and the third series respectively, so that the elongated sections of the first series and the second series define a first carcass ply and the elongated sections of the third series and the fourth series define a second carcass ply superposed on the first carcass ply.

40. (new) The method of claim 38, wherein the elongated sections of the first series and the second series are laid down in a first deposition plane, wherein the elongated sections of the third series and the fourth series are laid down in a second deposition plane, and wherein the first deposition plane and the second deposition plane are offset on respectively opposite sides with reference to the meridian plane of the toroidal support so that side portions of the elongated sections of the first series and the second series have a crossed orientation relative to side portions of the elongated sections of the third series and the fourth series.

41. (new) The method of claim 38, further comprising the step of applying additional portions of the annular reinforcing structures to regions close to the inner circumferential edges of the at least one carcass ply so that the at least one carcass ply is partly interposed between the second primary portion and the additional portion of respective annular reinforcing structures.

42. (new) The method of claim 30, wherein production of at least one primary portion of each annular reinforcing structure comprises the steps of:

laying down at least one elongated element in concentric coils to form a circumferentially inextensible annular insert substantially in a form of a crown;

forming at least one filling body of elastomer material; and

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joining the at least one filling body to the annular insert.

43. (new) The method of claim 42, wherein the at least one elongated element is laid down directly against side portions of elongated sections previously deposited on the toroidal support to form the annular insert directly in contact with the elongated sections, and wherein the at least one filling body is then formed by laying down a continuous strip of elastomer material directly against the annular insert.

44. (new) A carcass structure for a vehicle tyre, comprising:

at least one carcass ply comprising elongated sections circumferentially distributed around a geometric rotation axis of the tyre, each of the elongated sections extending in a U-shaped configuration around a cross-section outline of the carcass structure to define two side portions mutually spaced apart in an axial direction and one crown portion extending at a radially outer position between the side portions; and

at least two annular reinforcing structures located close to respective inner circumferential edges of the at least one carcass ply;

wherein each of the elongated sections substantially lies in a plane parallelly offset relative to a meridian plane of the carcass structure so that the crown portion of each elongated section is oriented, relative to a radial reference plane passing through a transition region between the crown portion and at least one side portion, at an angle having a different value from an inclination of the at least one side portion.

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45. (new) The carcass structure of claim 44, wherein each of the elongated sections lies in a plane parallel to the radial reference plane so that the crown portion of each of the elongated sections substantially lies in the radial reference plane, and wherein each side portion of the elongated sections extends in an inclined direction relative to the radial reference plane.

46. (new) The carcass structure of claim 44, wherein each of the elongated sections has a strip structure and comprises longitudinal thread elements at least partly incorporated into at least one layer of elastomer material.

47. (new) The carcass structure of claim 44, further comprising at least one first series and at least one second series of elongated sections, wherein elongated sections of the at least one first series and the at least one second series respectively lie in offset planes on respectively opposite sides relative to the meridian plane of the carcass structure so that the side portions of the elongated sections of the at least one first series have a crossed orientation relative to the side portions of the elongated sections of the at least one second series.

48. (new) The carcass structure of claim 44, further comprising at least one first series and at least one second series of elongated sections, wherein the elongated sections of the at least one first series are circumferentially distributed at a pitch at least equal to twice a width of the elongated sections of the at least one first series, and wherein the elongated sections of the at least one second series are disposed in spaces existing between the elongated sections of the at least one first series to define the at least one carcass ply together with the elongated sections of the at least one first series.

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49. (new) The carcass structure of claim 48, wherein each of the annular reinforcing structures comprises at least one first primary portion axially interposed between the side portions of the elongated sections of the at least one first series and the at least one second series respectively.

50. (new) The carcass structure of claim 48, further comprising at least one third series of elongated sections circumferentially distributed at a pitch at least equal to twice a width of the elongated sections of the at least one third series, and a fourth series of elongated sections disposed in spaces existing between the elongated sections of the at least one third series to define, together with the elongated sections of the at least one third series, at least one second carcass ply superposed on a first carcass ply formed of the elongated sections of the at least one first series and the at least one second series.

51. (new) The carcass structure of claim 50, wherein the elongated sections of the first carcass ply and the at least one second carcass ply respectively lie in offset planes on respectively opposite sides relative to the meridian plane of the carcass structure so that the side portions of the elongated sections of the first carcass ply have a crossed orientation relative to the side portions of the elongated sections of the at least one second carcass ply.

52. (new) The carcass structure of claim 50, wherein each of the annular reinforcing structures comprises:

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at least one first primary portion axially interposed between the side portions of the elongated sections of the at least one first series and the at least one second series respectively; and

at least one second primary portion axially interposed between the side portions of the elongated sections of the at least one third series and the fourth series respectively.

53. (new) The carcass structure of claim 52, wherein each of the annular reinforcing structures further comprises at least one additional portion disposed against the side portions of the elongated sections of the fourth series on an opposite side relative to the at least one second primary portion of the annular reinforcing structure.

54. (new) The carcass structure of claim 50, wherein the side portions of each elongated section of the at least one first series and the at least one third series respectively are each partly overlapped by side portions of at least one adjacent elongated section of the at least one second series and the fourth series respectively at a stretch included between a radially outer edge of a respective primary portion of the annular reinforcing structures and transition regions between the side portions and the crown portion.

55. (new) The carcass structure of claim 52, wherein each of the at least one first primary portion and the at least one second primary portion of the annular reinforcing structures comprises:

an annular anchoring insert substantially in a form of a crown disposed coaxially with the carcass structure and adjacent to an inner circumferential edge of the carcass plies, wherein the

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annular anchoring insert is formed of at least one elongated element extending in concentric coils; and

a filling body of elastomer material having one side joined to the annular anchoring insert.

56. (new) The carcass structure of claim 53, wherein the at least one additional portion comprises an additional annular insert substantially in a form of a crown made up of at least one elongated element extending in concentric coils and disposed coaxially with the carcass structure at a position disposed axially in side-by-side relationship with a filling body of the at least one second primary portion of a respective annular reinforcing structure.

57. (new) A tyre for vehicle wheels, comprising the carcass structure of claim 44.

58. (new) A tyre for vehicle wheels, comprising:

a carcass structure having at least one carcass ply comprising elongated sections circumferentially distributed around a geometric rotation axis of the tyre, each of the elongated sections extending in a U-shaped configuration around a cross-section outline of the carcass structure to define two side portions mutually spaced apart in an axial direction and one crown portion extending at a radially outer position between the side portions, the carcass structure further comprising at least two annular reinforcing structures placed close to respective inner circumferential edges of the at least one carcass ply;

a belt structure applied to the carcass structure at a circumferentially outer position thereof;

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